

any additional resin. An intermediate layer that has been laminated with external layers in this way can form finished cards after the cutting operation.

[0088] With reference to FIGS. 20 to 22, we will describe another implementation of the card or intermediate product manufacturing method according to the invention. In this implementation, one may take any assembly according to the invention, formed of a pierced plate 14 and electronic modules, in particular a display 6 and an electronic circuit 4 mounted on a substrate 12. As in FIGS. 16 and 17, the electronic display is arranged in an aperture of substrate 12 or at the periphery thereof. It is secured to the substrate by connecting pins or other connecting or securing means. This assembly according to the invention is provided with a resin 98, in a viscous liquid state, between two solid layers 94 and 96, respectively 104 and 106 in an installation provided with press rollers 100 and 102, between which the various elements are continuously introduced. Rollers 100 and 102 preferably rotate freely and the assembly formed of the electronic modules and the pierced plate, and the external layers, are pulled. This implementation is not restrictive, but has the advantage of allowing the assembly according to the invention and the external layers in contact with press rollers 100 and 102 to move forward in an identical way. Resin 98 is preferably added to bottom layer 94, or respectively top layer 104 and over the assembly according to the invention. This is in no way restrictive and any other way of adding the resin that allows the electronic assembly to be properly embedded or coated could be used by those skilled in the art. The installation supports have been shown entirely schematically and do not form any particular feature of the method of the invention.

[0089] It will be noted that press rollers 100 and 102, and the arrangement thereof in the card manufacturing installation, have been shown schematically. It is possible to provide several pairs of press rollers arranged one after the other or other similar means of pressure, for example a continuous press fitted with a conveyor belt. These pairs of rollers can have different diameters and the distance between the rollers of one pair can also be different. In particular, the distance between the press rollers could decrease in the direction of movement of the elements that pass through the press rollers. Thus, the thickness gradually decreases between external layers 94 and 96, or 104 and 106 respectively. This enables the resin 98 to be better distributed to obtain improved flatness for the manufactured cards.

[0090] Means other than press rollers could be provided, for example blades for spreading out the resin and distributing it in the remaining spaces in the apertures in the pierced plate and on either side of the assembly of the invention.

[0091] FIG. 21 shows a batch of cards obtained by the method described above. Cards 108 thus include an electronic module connected to a pierced plate 14 and coated with resin 98. These cards include two external solid layers 94 and 96, which have approximately flat surfaces. These layers 94 and 96 adhere properly to resin 98, so that they form part of the finished cards. In a known manner, each card is cut out of the batch of simultaneously manufactured cards using a cutting tool or by means known to those skilled in the art, particularly using a jet fluid.

[0092] FIG. 22 shows an intermediate product or a batch of cards 110 obtained by the manufacturing method described with reference to FIG. 20. Here, solid layers 104 and 106 form worksheets that do not adhere well to resin 98 so that these sheets 104 and 106 are removed once resin 98 has solidified.

An intermediate product, or batch of cards is thus obtained, whose body is formed by resin 98, the external surfaces of the resin then defining the external surfaces of the product obtained. According to various variants, other external layers can be subsequently added, by laminating either side of the intermediate product 110. Likewise, the cards 108 shown in FIG. 21 can also receive other external layers, in particular a printing layer and a final transparent protective layer. The cards can be individually cut before or after these additional layers are added.

[0093] In another implementation of the method described here, the intermediate product or cards can be formed in a press that has flat surfaces. All of the elements are added between these surfaces before any pressure is exerted to form the intermediate products or approximately flat cards. It will be noted that it is possible, firstly, to use press rollers and then to place the product obtained in a press with a flat surface until the resin solidifies. It will be noted finally, that resin 98 is preferably added in a viscous liquid state. However, in a variant, it is possible to add the resin or any other filling material in a solid state and then to melt it so that it can then fill the remaining spaces in the apertures in pierced plate 14 and thus form compact and substantially full cards, i.e. cards that have a relatively low level of residual air.

1-30. (canceled)

31. An assembly produced during the manufacture of cards and including at least an electronic module and a frame, having at least one, at least partially through aperture, said electronic module being electrically independent of said plate and at least partially housed in said at least one aperture, this assembly being intended to be brought in an installation where a resin is added to at least one side of said electronic module, said plate forming a positioning structure for said electronic module, said assembly being, wherein, before said assembly is brought to said installation, said plate and said at least one electronic module are assembled to each other in a sufficiently rigid manner for said at least one electronic module to remain in said at least one aperture in a substantially defined position relative to said plate until it is brought in said installation, and afterwards during said resin is added.

32. The assembly according to claim 31, wherein each aperture and/or the electronic module located in said aperture are arranged so that a space remains in the aperture, open on at least one side of said plate.

33. The assembly according to claim 31, wherein, at the periphery of each aperture, said plate has at least one projecting portion, which has a smaller thickness than that of said plate and is superposed on an edge zone of said electronic module, which is arranged in said aperture, said zone being secured to said projecting portion in order to secure the electronic module to the plate.

34. The assembly method according to claim 31, wherein each electronic module has at least one projecting zone, which is superposed on a peripheral area of the corresponding aperture in said plate, said projecting zone being bound to said peripheral area to secure the electronic module to the plate.

35. The assembly according to claim 34, wherein said peripheral area is defined by a notch, which is made at the periphery of each aperture, and which defines an intermediate step whose thickness is less than that of the plate.

36. The assembly according to claim 31, wherein each aperture is separated into two secondary apertures by a cross-beam of said plate, which is superposed on the electronic